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Foreword

Bacterial respiratory infections: closing in on antibiotic effectiveness ... and ineffectiveness

The global dissemination of highly antibiotic-resistant respiratory pathogens presents a challenge to clinicians caring for individual patients as well as a challenge to the community of researchers in microbiology and respiratory medicine to provide rational approaches to the control of this problem. The individual reviews in this supplement represent a sample of our current understanding about issues surrounding antimicrobial efficacy and resistance in respiratory infections. The last decade has seen a convergence of data sets that is consistent and clear.

As a leader in the field of antimicrobial pharmacokinetic/pharmacodynamic (PK/PD) issues relative to respiratory infections, Dr William Craig's animal models have defined those parameters associated with treatment success, and given us a basis for predicting treatment failures. Those predictions are consistent with results in the 'double-tap' studies in otitis media and sinusitis, conducted by Dr Ron Dagan and others. The Nordic countries have taken the lead in community-based programs to control antimicrobial resistance. Dr Otto Cars from Sweden has reviewed the drivers of resistance in the community and summarized the attempts made so far to limit unnecessary antibiotic use. An understanding of the clinical relevance of resistance is essential to the design of appropriate therapeutic strategies. Dr Javier Garau from Spain has summarized this field and provides new data on the clinical relevance of macrolide resistance in the pneumococcus.

Because of the generally favorable natural history of most bacterial respiratory infections, and to a degree because of clinicians' limitations in their ability to distinguish viral from bacterial infections, the actual antimicrobial efficacy of any given agent can be hard to discern. Hundreds of millions of dollars are currently spent on oral antimicrobials that are bacteriologically ineffective against the antibiotic-resistant pathogens for which they are prescribed. How do we deal with those relatively inactive agents? What is the magnitude of the costs and morbidities associated with these less optimal choices? How can we interpret clinical trials that are not designed or powered to reveal differences between effective and ineffective agents? The authors here lay the scientific groundwork for tackling difficult tasks: changing behavior that may adversely affect our patients. Recent national guidelines are helpful. In short, the data are compelling: We need to move on to the next step—the implementation of antimicrobial therapy based on sound pharmacodynamic principles.

KEITH KLUGMAN, MICHAEL D. POOLE

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